edited by

Nicholas Crafts
and
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ECONOMIC GROWTH IN EUROPE SINCE 1945

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This volume re-examines the topic of economic growth in Europe after the Second World War. The contributors approach the subject armed not only with new theoretical ideas, but also with the experience of the 1980s on which to draw. The analysis is based on both applied economics and economic history. Thus, while the volume is greatly informed by insights from growth theory, emphasis is given to the presentation of chronological and institutional detail. The case study approach and the adoption of a longer-run perspective than is normal for economists, allow new insights to be obtained.

Individual chapters cover Belgium, Denmark, Germany, Spain, France, Ireland, Italy, the Netherlands, Portugal, Sweden and the UK. Further chapters explore general European institutional arrangements and historical circumstances. The result is a genuinely comparative picture of postwar growth, with insights that do not emerge from standard cross-section regressions based on the post-1960 period.

Economic growth in Europe since 1945

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Preface

Our principal aim in organizing this volume has been to present case studies of postwar growth in individual countries written in such a way that the book as a whole gives the reader a genuinely comparative picture. The collection also contains papers on important aspects of the general experience of growth, and an overview chapter which is intended to provide the context into which the country studies fit.

The work which is reported in this book is the outcome of a network which operated during 1992–3 sponsored by the SPES programme of the European Commission, directed by Crafts and Toniolo and administered by CEPR. This organization permitted the establishment of a common format for the country studies and facilitated exchange of ideas and mutual criticism of initial drafts, with the result that the papers are more comparable than would otherwise have been the case.

The reawakening of economists' interest in growth since the mid-1980s has been one of the principal reasons for this project. At the same time, it is now quite a while since the last exercise of a similar kind, the much used and respected collection edited by A. Boltho (*The European Economy: Growth and Crisis*, Oxford University Press, 1982). The authors in this volume are able to revisit the topic of postwar growth armed not only with some new theoretical ideas, but also with the experience of the 1980s on which to draw.

Moreover, on this occasion the analysis has been based not only on applied economics, but also on economic history. Thus, while the book is greatly informed by insights from growth theory, the approach in the country studies emphasizes the presentation of chronological and institutional detail. The case study approach and the adoption of a longer-run perspective than is normal for economists allow insights to be obtained which do not emerge from standard cross-section regressions based on the post-1960 period.

These various themes are developed in the overview chapter by Crafts and Toniolo. This paper focuses particularly on the so-called Golden Age of growth conventionally dated as 1950–73. Two important points which stand out are that the catch-up of leading countries by followers was much stronger in this period than

in any other, and that this catch-up was by no means automatic, but was based on particular institutional arrangements and historical circumstances. These are explored at a general level in the contributions by Boltho, Eichengreen and Olson, while Olson's well-known ideas relating to Eurosclerosis are scrutinized for the central case of Germany by Paqué.

Authors of the country studies were asked to consider the role that catch-up and convergence played in each case, and also to examine more generally the determinants of productivity performance and to consider the legacy of the interwar and wartime experience. Clearly, investment in 'broad capital' was expected to be a central concern, but this would be seen in its institutional context, which could be expected to have influenced incentives to invest. The extent of institutional differences across Western European countries is broad enough to make this a potentially rewarding exercise, but the research required to address this issue fully remains a large project for the future.

Each country study contains an overview of performance and a brief chronological account of growth divided into similar subsections. There is also an opportunity to take up interesting aspects of growth specific to individual countries. The set of countries comprises most of Western Europe together with East Germany. East Germany has been included not only because of unification, but also because it allows further insights into what the West got right after World War II.

Members of the network on European growth also devoted a good deal of effort to exploring quantitative aspects of economic growth, with a view to improving understanding of and facilitating access to the key raw materials of a database for studying postwar growth. In addition, the evidence on key topics such as convergence, investment in broad capital and trend growth was evaluated on a cross-sectional basis. This work should be seen as complementary to the present volume, in terms of providing further interpretation of postwar economic history and also factual material for reference, and it is to be published as B. van Ark and N.F.R. Crafts (eds.), *Quantitative Aspects of Postwar European Economic Growth* in 1996.

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1 Postwar growth: an overview

NICHOLAS CRAFTS and GIANNI TONIOLO

1 Introduction

> One of the most difficult and intriguing tasks of a theory of economic growth is to combine both the disruptive and the integrative, the qualitatively changing and the quantitatively steady, aspects of the process. *(Kuznets, 1965: 23)*

We still refer to the past fifty years as the 'postwar': this is perhaps the best tribute to the fact that the 'second Thirty Years War' (1914–1945) marked a major watershed in the history of mankind. So much so that it proved to be a major intellectual watershed as well. In fact, until fairly recently, 1945 often marked the borderline of historical research, more recent decades being considered as the playing ground for journalists, political scientists and sociologists. Only the boldest, or most inconsiderate, scholars entered the field, and they did so at their own risk. The same can be said of economic historians: with few exceptions, they have been reluctant to apply the tools of their trade to the 'postwar' period, more often than not leaving it as the domain of applied economists. Things are changing, however, and the half century following the end of the Second World War is now increasingly seen as being ripe for historical investigation, much beyond the Marshall Plan years that have attracted much recent attention.

This chapter aims at reviewing the performance of the European economy since 1945 in a longer-run perspective, which sees the period from 1913 to 1973 as being an exceptional one in the history of 'modern economic growth', in that it departed from the secular trend first (1913–45) by under- and then (1945–73) by overperforming. In this chapter, the European economy is tentatively seen as an aggregate, at least *in fieri*. If the interwar years of slow and volatile growth were characterized by nationalism and wars that crystallized national economic peculiarities, the subsequent period of high growth resulted in a convergence of per-capita incomes that can be seen and understood as being both the cause and the effect of a broader social and institutional convergence.

Table 1.1. *European growth, 1890–1992 (average annual growth)*

Period	Real GDP (1)	Population (2)	Real GDP per capita (3)	Real GDP per person-hour (4)
1890–1992	2.5	0.6	1.9	2.6[a]
1890–1913	2.6	0.8	1.7	1.6
1913–50	1.4	0.5	1.0	1.9
1950–73	4.6	0.7	3.8	4.7
1973–92	2.0	0.3	1.7	2.7[b]

[a] 1890–1987.
[b] 1973–87.
Note: GDP and population are aggregates for 12 countries (Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, United Kingdom, all adjusted for boundary changes).
Sources: 1870–1989, Maddison (1991); 1989–92, OECD (1993). Countries are those for which col. (4) can be calculated.

2 Main trends in postwar European growth

By 1870 all European countries were experiencing that 'epochal innovation' which Kuznets called 'modern economic growth'. Some of them, the pioneers, had already proceeded a long way along the road leading to ever increasing material welfare; others, the late-comers, were just taking their first steps. Since then, the aggregate real GDP of Western Europe[1] has grown at an average annual rate of 2.3 per cent, or about 1.7 per cent per annum, per capita.

The secular trend fits well with Kuznets' definition of 'modern economic growth' as a process characterized by 'rates of growth in per capita income rang[ing] mostly from about 10 percent to over 20 percent per decade' (Kuznets, 1965: 18). While the long-run trends follow the steady quantitative change predicted by such authors as Colin Clark, Kuznets, Abramovitz and Chenery, Table 1.1 shows that the performance of the European economy during individual relevant subperiods diverged considerably from the secular trend.

The perspective of secular trends in 'modern economic growth' is a useful starting point in considering the economic history of Europe during the half century following the end of the Second World War. In particular, such a perspective is helpful when considering the standard subdivision into two distinct periods, the first, to about 1973, being characterized by very high growth rates and near-full employment, the second showing a rather sluggish performance in terms both of output and employment. Here, the longer-run view conveys two messages: (1) the period 1950–73 was truly exceptional in the process of 'modern economic growth', (2) the subsequent growth record can hardly be regarded as unsatisfactory.

The exceptional character of the 'high-growth years' is better judged in the light of the poor European performance during the previous three decades. Whether or not one agrees with Kuznets[2] that major wars are somehow endogenous to the process of modern economic growth, they certainly coincide with a considerable slowdown in European growth between 1913 and 1950, plausibly not unrelated to the boom of

the following two decades. As we shall see, the catch-up for ground lost in two world wars and in the most severe economic depression to date is one of the reasons explaining the much above average growth rates of the 1950s and 1960s: other reasons, discussed in section 6, relate to domestic and international factors likely to be exceptional in the history of modern economic growth.

Post-1973 growth looked uncomfortably low in the light of expectations created during the previous quarter of a century. However, if both the longer run and the predictions of the then-prevailing theory are taken into account, the picture looks considerably less dismal. In particular, Europe's per-capita output growth is (1) just slightly below the secular trend,[3] (2) equal to that achieved during the 'belle époque' of the world economy (1890–1913), (3) distinctly better than the belle époque if seen in terms of GDP/hour worked, (4) much above the pre-1890 rates.[4] It is hard to pass a negative judgement on such a record, particulary if it is confronted with the neoclassical growth theory assumption of diminishing returns to factor inputs.

Having assessed the postwar European performance against the longer-run background of 'modern economic growth', we may now turn to a brief appraisal of some quantitative features of the main subperiods.

2.1 War damage and reconstruction

The damage induced by war on the individual national economies is relevant to our analysis of long-run growth in that: (1) its sheer dimensions provided a rationale for American aid, with the attendant new 'international order' and technology flow, and (2) domestic reconstruction was often accompanied by important institutional changes. Table 1.2 provides an impressionistic picture both of the extent of war-induced economic setbacks and of the speed of reconstruction. In 1945 the GDP of France, of the three Axis countries and of the Netherlands had fallen back to late nineteenth-century or early twentieth-century levels. One or two generations of work and accumulation had been lost. Belgium fared a little better. Of the belligerent countries, only the United Kingdom managed to contain the post-1943 economic collapse to minor proportions; it could not, however, avoid a serious post-war slump. Neutral countries in our sample fared distinctly better and, in fact, managed to grow throughout the conflict.

If the economic effect of the war was devastating, the speed of recovery was so impressive as to take by surprise informed observers, trade unions, entrepreneurs and policy-makers alike. In five years at most, Europe recovered the ground lost relative to the highest prewar income levels.[5] It is, thus, quite safe to place the end of the first phase of reconstruction and the beginning of a new era in the history of European economic growth in 1950.

2.2 The high-growth years

As we have seen, the years 1950–73 witnessed a unique episode in the history of European 'modern economic growth' – so much so that the period is now often referred to in the literature as the 'Golden Age'. Not only were growth rates exceptionally high (Table 1.1), but cyclical fluctuations were mild[6] and inflation rates socially acceptable.[7]

Table 1.2. *War damage and reconstruction*

	Pre-war year when GDP was the same as in 1945 (1)	Year when GDP recovered the highest prewar level (2)	Annual rate of GDP growth during 'reconstruction' (1945 to year in col. (2)) (3)
Austria	1886	1951	15.2
Belgium[a]	1924	1948	6.0
Denmark	1936	1946	13.5
Finland	1938	1945	
France	1891	1949	19.0
Germany	1908[b]	1951	13.5
Italy	1909	1950	11.2
Netherlands	1912	1947	39.8
Norway	1937	1946	9.7
Sweden	never		
Switzerland	never		
United Kingdom	never		

[a] Interpolations.
[b] Relative to 1946.
Source: Data from Maddison (1991: 208–19).

Productivity growth is, obviously, the core phenomenon to be investigated in the present context: detailed measures and analyses of its determinants are, therefore, provided in the individual country studies included in this book. In the last column of Table 1.1, an attempt is made at estimating Europe-wide long-run changes in labour productivity. Although aggregation and index number problems make estimates in Table 1.1 more questionable than those for individual countries, the table itself leaves little doubt as to the order of magnitude of the general acceleration in productivity that took place in Europe during the Golden Age, making it a unique episode in the 'modern economic growth history' of the Old Continent. Four features of this extraordinary event are worth noting:

- It is a distinctly European phenomenon, Japan being quantitatively and otherwise a case of its own,[8] North America and Australia showing a much less pronounced deviation from the secular 'norm',[9] and other successful countries such as the NICs entering their phases of high growth in later decades.
- High growth rates, relative to previous and subsequent records, characterize almost all the individual European economies, regardless of their social, political and economic institutions.
- The period is strongly characterized by both β- and σ-convergence, to use Barro and Sala-i-Martín (1991) terminology. In other words, during 1950–73 we observe both a pronounced tendency for initially poorer countries to grow faster than richer ones and a decline in the cross-sectional scatter of per-capita output growth.

Table 1.3. *GDP per person growth in Eastern Europe*

	GDP/person 1950 (1990 international dollars)	GDP/person 1973 (1990 international dollars)	Growth of real GDP/person 1950–73 (% per year)
Czechoslovakia	3480	6995	3.1
Hungary	2482	5601	3.6
Poland	2447	5334	3.4
Bulgaria	1654	5294	5.2
Romania	1175	3458	4.8
	GDP/person 1973 (1990 international dollars)	GDP/person 1992 (1990 international dollars)	Growth of real GDP/person 1973–92 (% per year)
Czechoslovakia	6995	6457	−0.4
Hungary	5601	5639	0.0
Poland	5334	4819	−0.5
Bulgaria	5294	4132	−1.1
Romania	3458	2531	−1.3

Source: Maddison (1995).

- Exceptionally low unemployment rates prevailed. In most countries, the 'triumph of full employment' was a historically distinct feature of the period.

While we leave a discussion of the above-mentioned features of the period to sections 5 and 6, dealing with the causes of growth, a brief quantification of the last three points might be in order here. Table 1.3 provides some evidence showing that 1950–73 growth rates of per-capita GDP in Eastern Europe were roughly as high as those prevailing in the West (see also Ofer (1992)), while the Iberian economies under Salazar and Franco were among the fastest growers in the West itself, as Table 1.4 shows.

A useful, if impressionistic, perception of the convergence processes may perhaps be drawn from Tables 1.3 and 1.4. We observe both a strong tendency for initially poorer countries to grow faster than richer ones and a decline in the cross-sectional scatter of per-capita output. As a result, in the early 1970s, the dispersion in *levels* of per-capita income among European countries was much less pronounced than it had been a quarter of a century earlier. Moreover, the formation of a core of economies characterized by roughly similar standards of living was, by then, well under way. Several features of the experience of Western Europe stand out:

- The ratio between the highest and the lowest per-capita incomes fell very fast between 1950 and 1973, and more than halved in the period of 1950–92.
- By the early 1990s there had emerged a 'core' group of nine countries with a very similar per-capita income all within $\pm$ 8.0 per cent of the median, whereas in 1950 only two were.

Table 1.4. *GDP per person in 1990 international dollars*

	1950	1973	1950–73 growth % (rank)
1. Switzerland	8939	17953	3.1 (12)
2. UK	6847	11932	2.4 (16)
3. Sweden	6738	13494	3.1 (12)
4. Denmark	6683	13416	3.1 (12)
5. Netherlands	5850	12763	3.4 (10)
6. Belgium	5346	11905	3.5 (9)
7. France	5221	12940	4.0 (8)
8. Norway	4969	10229	3.2 (11)
9. W. Germany	4281	13152	5.0 (4)
10. Finland	4131	10768	4.2 (7)
11. Austria	3731	11308	4.9 (5)
12. Ireland	3518	7023	3.1 (12)
13. Italy	3425	10409	4.9 (5)
14. Spain	2397	8739	5.8 (2)
15. Portugal	2132	7568	5.6 (3)
16. Greece	1558	6229	6.2 (1)
	1973	1992	1973–92 growth % (rank)
1. Switzerland	17953	21036	0.9 (16)
2. Sweden	13494	16927	1.2 (15)
3. Denmark	13416	18293	1.7 (9)
4. W. Germany	13152	19351	2.1 (5)
5. France	12940	17959	1.7 (9)
6. Netherlands	12763	16898	1.5 (12)
7. UK	11932	15738	1.5 (12)
8. Belgium	11905	17165	1.9 (7)
9. Austria	11308	17160	2.2 (3)
10. Finland	10768	14646	1.6 (11)
11. Italy	10409	16229	2.4 (2)
12. Norway	10229	17543	2.9 (1)
13. Spain	8739	12500	1.9 (7)
14. Portugal	7568	11130	2.1 (5)
15. Ireland	7023	10711	2.2 (3)
16. Greece	6229	8238	1.5 (12)

Source: Maddison (1995).

- Both Switzerland at the top and Greece at the bottom remained in the same positions.
- There is an inverse rank correlation between initial level of income and growth, which is particularly marked in the Golden Age.

A similar inverse correlation for the Golden Age between initial income level and

Table 1.5. *Unemployment rates*

Twelve countries (benchmark years)		Four countries (benchmark years)	
1929	4.0	1920–9[a]	4.4
1938	5.0	1930–8	7.1
1950	4.5	1932[b]	12.8
1973	2.9	1950–9	4.2
1989	7.4	1960–73	2.5
		1962	1.9
		1974–81	5.2
		1982–9	8.8
		1990–3	9.2

[a] Three countries only (excludes Italy): France three years only.
[b] Three countries only (excludes France).
Sources: Maddison (1991), OECD (1993).

subsequent growth is noticeable in Eastern Europe in Table 1.3. Here, however, performance is somewhat less impressive in the years 1950–73 and, obviously, very disappointing since 1973. Comparison of Tables 1.3 and 1.4 indicates that, normalizing for initial income level, East European countries' growth was less than for comparable Western European countries in 1950–73. For example, Czechoslovakia does about as well as Ireland, which is an unusually poorly performing country in the West, while the rapidly rising difference between Austrian and Czech income levels as the postwar period unfolds is a stark testimony to Communist failure.

Finally, while labour market statistics are among the least comparable over time and cross-country, there can be little doubt that European unemployment reached its lowest secular level during the so-called Golden Age. Some evidence is provided in Table 1.5, showing benchmark-year unemployment rates for twelve European countries[10] and period averages for the four largest ones.[11] Data for years up to 1913 are not available on a roughly comparable basis, but scholars agree that it is unlikely that unemployment reached the low levels of the 1960s. Moreover, it is believed that data for the interwar period tend to underestimate underemployment and, therefore, unemployment when measured according to postwar statistical definitions.

2.3 The post-1973 slowdown

The end of the Golden Age is often conventionally dated as 1973, the year of the first oil shock. In accepting this benchmark year, we imply neither that a sudden discontinuity in productivity growth can be detected in this particular year, nor that its main cause is changing terms of trade energy input. It is true, however, that the early 1970s saw a major departure from the main trends of the previous two decades, heralded by the end of the so-called Bretton Woods system in 1971 and characterized by severe shocks both to aggregate supply and aggregate demand.

As mentioned earlier, production and productivity growth levelled off around the

secular trend (Table 1.1). The slowdown affected market and socialist economies alike (Table 1.3). Unemployment rates almost trebled in the 1980s relative to the 1960s (Table 1.5). Cyclical volatility increased with several European countries experiencing negative growth rates in 1975, some time between 1980 and 1983, and again in the early 1990s.

Prima-facie evidence of β-convergence appears to be much weaker after 1973. In the aggregate of the European twelve and America, GDP per person grew roughly at the same rate despite Europe's lower 'starting' point. Intra-European association of growth rates with initial GDP levels is less clear-cut than it appeared to be in the previous (1950–73) period (Table 1.5). Nevertheless, by 1992, not only was the dispersion in per-capita income levels among the sixteen countries in Table 1.4 much less pronounced than it had been forty years earlier, but there had emerged a distinctive core of nine countries with a very similar per-capita income, all within $\pm$ 8.0 per cent of 16900 1990 international dollars.

3 Previous interpretations of European postwar growth

Between the early 1960s and the early 1980s, an earlier vintage of growth theory produced a large research effort on the European experience. The focal point of this writing was the rise and fall of the Golden Age. There are interesting themes to be considered from both traditional neoclassical and Keynesian writers. This section offers a brief and somewhat critical survey of this literature.

3.1 Growth accounting

The use of growth accounting to investigate postwar growth was pioneered by Denison (1967) in a deservedly famous study. Perhaps the best-known recent research in this tradition is that of Maddison (1987), subsequently updated and revised (1991). The central approach embraces a traditional neoclassical (Solow) view, based on diminishing returns to factor accumulation and exogenous total factor productivity (TFP) growth. The methodology relies on assumptions rather than estimation and uses factor shares to weight the contributions of capital and labour.

The main proximate source of the acceleration in growth during the Golden Age and subsequent slowdown emerges as TFP growth. A large role is assigned to residual efficiency both in speed-up and slowdown and also in the growth rate gap between the UK and, on the other hand, France and Germany in 1950–73 (see Table 1.6). A similar pattern of TFP growth shows up in Table 1.7, which takes in a wider group of countries. Rapid TFP growth reflected, in part at least, technology transfer, postwar reconstruction and structural change.

Growth accounting also sees a strong supporting role for increased physical capital formation in the faster growth of the Golden Age compared with before and since, although this is given relatively little weight in explaining the UK's slower growth. Surprisingly, human capital formation is seen as playing only a very minor role in accounting for variations in growth rates. The reliability of conclusions drawn from growth accounting has, of course, often been questioned and is potentially undermined by the advent of new growth theory which stresses the importance of human capital and externalities to investment. The general thrust of

Table 1.6. *Differences in the sources of growth (% per year)*

	France	Germany	UK
1913–50			
Labour input	−0.17	0.38	0.12
Education	0.36	0.24	0.33
Capital input	0.65	0.62	0.82
Total factor productivity	0.67	0.28	0.35
Backwardness	0.04	0.20	−0.04
Other specific	0.06	−0.09	0.05
Residual efficiency	0.57	0.17	0.34
1950–73			
Labour input	0.18	0.15	0.01
Education	0.39	0.19	0.20
Capital input	1.84	2.27	1.75
Total factor productivity	3.02	3.50	1.27
Backwardness	0.71	0.70	0.17
Other specific	0.43	0.54	0.35
Residual efficiency	1.88	2.26	0.75
1973–87			
Labour input	−0.24	−0.49	−0.19
Education	0.56	0.05	0.41
Capital input	1.48	1.28	1.12
Total factor productivity	0.92	1.01	0.82
Backwardness	0.11	0.28	−0.25
Other specific	0.19	0.22	0.33
Residual efficiency	0.62	0.51	0.74

Source: Derived from Maddison (1991) as in Crafts (1992a).

early empirical work of this kind is to regard growth accounting's treatment of physical capital as basically acceptable, but to argue that the approach underestimates the role of human capital by ignoring training and externalities (Oulton and O'Mahony, 1994).

In placing his findings in a historical context, Maddison stressed the special and unrepeatable characteristics of the Golden Age, including liberalization of international trade, successful macroeconomic management and a backlog of opportunities for catch-up growth (1991: 168). Growth accounting has proved fruitful in suggesting working hypotheses like these, but cannot in itself test them.

The growth accounting approach has also been used to consider the experience of Eastern Europe, which, as Table 1.3 demonstrated, shared in the growth of the Golden Age. Here the data difficulties are potentially particularly daunting, but research is now becoming available which seems to correct more successfully for the problems like hidden inflation that bedevil this area. The adjusted figures in Table 1.7 show that the pattern of acceleration and decline in TFP growth also appears in Eastern Europe, but at lower rates, again suggesting that catch-up was important but less successfully achieved.

Table 1.7. *TFP growth in different periods (% per year)*

	1950–62	1960–73	1973–9	1979–90
Belgium	1.9	3.9	1.5	1.4
Denmark	1.8	2.8	1.2	1.3
France	3.5	4.0	1.7	1.7
West Germany	4.5	2.7	1.8	0.8
Italy	4.3	4.6	2.2	1.3
Netherlands	2.6	3.1	1.5	0.9
UK	1.3	2.3	0.6	1.6
Czechoslovakia				
Official	n.a.	2.3	2.1	0.2
Adjusted	n.a.	1.3	0.3	−1.5
East Germany				
Official	4.0	2.4	1.9	1.2
Adjusted	2.9	1.8	1.0	−0.5

Note: Data for 1950–62 and East Europe relate to GDP, others to business sector.
Sources: Denison (1967), OECD (1991a), Klacek *et al.* (1993) and Ritschl (1996).

3.2 Eurosclerosis

The notion of sclerotic tendencies in economic growth performance achieved widespread attention in the 1980s. The seminal work was that of Olson (1982). The approach is based on public choice economics and argues that democracies tend through time to accumulate interest groups which inhibit growth unless these turn out to be encompassing organizations. Thus, 'distributional coalitions slow down a society's capacity to adopt new technologies and to reallocate resources in response to changing conditions, and thereby reduce the rate of economic growth' (Olson, 1982: 65).

Olson developed his argument both to explain the general speeding up of TFP growth in the Golden Age and the subsequent slowdown, as well as to account for the different experiences of countries like Sweden, West Germany and the UK. He argued that trade liberalization, and particularly the formation of new arrangements such as the European Community, broke down interest group barriers to growth, although eventually these reappeared in the new context. Fast growth in the early postwar period in countries like Germany compared with the UK would be expected since distributional coalitions were temporarily destroyed by initially totalitarian government and then more fully by foreign occupation. Better growth in Sweden than the UK could be explained by the highly encompassing nature of Swedish but not British special interest groups, as reflected, for example, by the different nature of their trade unions. Further reflections on these themes can be found in Olson (1996).

Although political economy considerations surely do play a serious part both in the success of postwar reconstruction and in relative success and failure in postwar growth, the original formulation proposed by Olson has been quite strongly criticized in subsequent research. Two points have been well made in recent papers.

Table 1.8. *Demand fluctuations and growth (% per year)*

	Effect of standard deviation of *Y*	Effect of standard deviation of *RM*	Sum
Austria	1.3	−1.1	0.2
Belgium	1.1	−0.5	0.6
Denmark	1.3	−1.1	0.2
Finland	1.6	−1.5	0.1
France	0.9	−0.6	0.3
Germany	1.5	−0.8	0.7
Ireland	1.2	−0.8	0.4
Italy	1.4	−0.8	0.6
Netherlands	1.4	−0.9	0.5
Norway	0.8	−0.5	0.3
Portugal	1.6	−1.1	0.5
Spain	1.5	−0.9	0.6
Sweden	0.9	−1.0	−0.1
Switzerland	1.8	−0.9	0.9
UK	0.9	−0.9	0.0

Source: Derived from Kormendi and Meguire (1985: 149, equation (4)).

First, the suggestion that Germany was purged of sclerotic interest groups in the 1940s is hotly contested by Paqué (1994). Second, more generally, Unger and van Waarden (1994) suggest that the overall impact of interest groups on growth is much less adverse than Olson claims, and that the differing experiences of the 1930s and 1940s had little impact on the subsequent power of distributional coalitions.

Econometric analysis of international cross-sections has also tended to reject the sclerosis hypothesis. Crafts (1992b) found that adding various measures of corporatism as a way of looking at the degree of encompassing in organizations added no explanatory power to a conventional model of catch-up growth. Similarly, Castles and Dowrick (1990) found that, having allowed for capital and labour growth and an initial income gap, a variable measuring time since the last interruption to domestic democracy was insignificant.

3.3 Demand stabilization

Keynesian economists have always stressed the absence of economic crises in the Golden Age, and have argued that the postwar commitment to demand management and the stability achieved under the Bretton Woods system were more conducive to investment and growth than the shocks of the 1920s and 1930s. Similarly, the stagflation of the 1970s is blamed for the abrupt ending of the Golden Age. Arguments of this kind also feature prominently in Maddison (1991).

Perhaps the best-known exposition of these views is by Boltho, who argues that 'If cheap technology and abundant labour and raw materials were not novel features of industrial Europe, something else must still explain why in the 1950s and 1960s they led to "supergrowth"... Such an explanation would seem to have to come from the demand side' (1982: 15).

The best-known attempt to test this hypothesis was that of Kormendi and Meguire (1985), some of whose results, based on international cross-section regressions for 1950–77, are reported in Table 1.8. They found that a higher variance of output was actually positively rather than negatively related to growth, but that greater variation in unanticipated money (RM) did, as expected, reduce growth. Comparison of equations with and without investment as an additional explanatory variable led Kormendi and Meguire to conclude that the impact came partly through greater investment, but more through higher returns to investment.

These results provide rather mixed support for Boltho's position. They do not suggest that fine tuning via demand management explains relative success and failure in growth, but they do indicate that unpredictable policy is bad for growth. No comparison is available with other periods, but it does seem probable that monetary shocks were larger in the interwar period, and the regressions show that this might have had a serious adverse effect on growth.

While this may be true, Boltho's emphasis on demand as the key difference between the interwar and postwar periods seems to be overstated. In particular, it underplays the much greater postwar ease of technology transfer relative to the previous decades, together with the reduced importance of natural resources and domestic market size in making it easier for Europe to catch up with the USA in the postwar period (Nelson and Wright, 1992).

3.4 Export-led growth

An alternative Keynesian view of postwar growth was put forward by Thirlwall (1979) following in the footsteps of Beckerman (1962) and Lamfalussy (1963). Here the central hypothesis is of a balance of payments constraint on demand and thus on growth. The full story then involves virtuous (vicious) circles in which better (worse) export demand growth prospects promote higher (lower) investment, which enhances (retards) productivity and competitiveness, and further reinforces differential export growth prospects.

The flavour of these arguments is well reflected in the following: 'Rates of growth of capacity, and hence output, in the long run are determined by expectations about future demand prospects' and 'the first place to start seeking an explanation of widely divergent growth rates is in the field of the conspicuous role played by buoyant exports and the foreign balance in determining relative growth rates in Europe in the last decade' (Beckerman, 1962: 916, 918). Shortly afterwards, estimates of income elasticities of demand for exports by Houthakker and Magee (1969) seemed to show a starting point for these virtuous and vicious circles; their results, reported in Table 1.9, showed a huge apparent advantage for Japan over the UK.

However, subsequent research has not been very kind to these export-led growth hypotheses. Three points in particular should be noted.

- Houthakker and Magee's estimates are now generally regarded as unreliable. Balassa calculated constant market share (ex-ante) elasticities based on a detailed disaggregation of trade by commodity and market. As Table 1.9 shows, these indicate quite minor differences in initial positions and thus no real basis from which the vicious/virtuous circles could develop.

Table 1.9. *Income elasticities of demand for exports*

	Houthakker and Magee (1951–66)	Balassa (1953–71)
Austria	1.59	2.04
Belgium	1.87	1.98
Denmark	1.69	1.82
France	1.53	2.04
Germany	2.08	2.27
Italy	2.95	2.07
Japan	3.55	2.00
Netherlands	1.88	1.91
Norway	1.59	1.82
Sweden	1.76	1.93
UK	0.86	2.20

Sources: Houthakker and Magee (1969) and Balassa (1979).

- Indeed, it seems likely that Houthakker and Magee's estimates reflect differences in export supply capabilities. Krugman (1989) set out a plausible model based on intra-industry trade, in which countries with a faster rate of growth of productive potential exhibit a faster rate of increase in the variety of their exports, gain world market share and appear to have faced higher income elasticities of demand for exports. In Krugman's reformulation, all the differences originate on the supply side.
- The Beckerman/Thirlwall model depends on an absence of conventional neoclassical price effects, which would correct balance of payments disequilibria, and, at bottom, supposes a world of real wage rigidity. This is widely rejected empirically as an acceptable long-run proposition (Layard *et al.*, 1991: 210).

3.5 Labour supply

A number of writers have seen an elastic labour supply as a key factor underwriting the supergrowth of the Golden Age and another reason why, in the 1950s especially, German growth could outstrip that of the UK. Several variants on this theme were proposed during the 1960s. As was mentioned earlier, Denison (1967) found reallocation of labour from low-productivity agriculture to be a major (transitional) addition to TFP growth. A much more controversial hypothesis was advanced by Kaldor (1966).

Kaldor argued that the manufacturing sector was central to postwar growth and that Verdoorn's Law operated in this sector, i.e. that labour productivity growth was a positive function of the growth of employment. This might be seen as a kind of dynamic economies of scale. Countries in which there were reserves of agricultural labour or substantial immigration could benefit from Verdoorn's Law and would experience faster growth. Relatively slow growth would be the outcome in the UK.

A number of subsequent articles challenged these claims. Crucially, Kaldor's

approach and that of his disciples, Cripps and Tarling (1973), assumed away catch-up growth based on reducing the technology and capital/labour ratio gaps between Europe and the USA. The econometric evidence in favour of Verdoorn's Law as a general proposition was readily shown to be very weak (Chatterji and Wickens, 1983; Gomulka, 1971; Rowthorn, 1975).

The most intriguing version of the labour supply hypothesis was proposed by Kindleberger (1967). He was careful not to claim too much: 'the availability of excess labour does not determine the levels at which growth will be maintained . . . An elastic labour supply supports high rates of investment . . . But the labour supply . . . is a permissive rather than an initiating or even a determining factor' (1967: 4). Kindleberger invoked the famous Lewis model of development with unlimited supplies of labour, and argued that an elastic labour supply sustained the share of profits.

This prediction is not, however, one which would be derived from the models of growth and unemployment normally applied to European economies today. In the standard bargaining model framework of the NAIRU model, profits share is independent of the bargained wage and of union power, while at the macro level unemployment adjusts to bring the target real wage into line with the feasible real wage (Layard *et al.*, 1991: 100–9). In a growth model employing intertemporal maximization, accumulation depends on the return to investment and the perceived opportunity cost of investment, not the share of profits.

Nevertheless, Kindleberger's suggestion that wage moderation may have been important to the launching of the Golden Age is still one that deserves to be taken seriously, and it is explored in considerable detail by Eichengreen (1996). While at the macro level unemployment can sustain profits, at the micro level, where investment decisions are made, the expected rate of return depends on workers' ability to commit themselves to restrain wage claims, despite the fact that they are too small to influence the NAIRU. Postwar circumstances may indeed have been unusually favourable to the creation of institutions which would facilitate wage moderation by workers in return for high investment by firms.

Overall, this earlier body of work suggests that the Golden Age was an unusual period and provides some useful insights both into the achievement of high growth and into the relative success and failure of individual countries. Nevertheless, at the very least it must be recognized that even the most plausible of these accounts leaves a large number of loose ends. By comparison with more recent theorizing on growth, several points appear rather unsatisfactory. In particular, there is very little emphasis placed on human capital, demand seems to be given too much prominence, and questions of catch-up and convergence are treated in a rather casual fashion. Above all, the large role left for 'residual efficiency' changes in growth accounting suggests a need for further research.

4 Recent developments in growth theory

As we have seen, until quite recently mainstream economics analysed economic growth in terms of the Solow model and its empirical counterpart, the growth accounting pioneered by Abramovitz, Denison and Kendrick and continued most notably by Maddison (1987). Nevertheless, economists were uneasy about this. As

van de Klundert and Smulders put it, 'The neoclassical model can explain the stylized facts as listed by Kaldor . . . However, the way in which the model explains these facts is unsatisfactory. All long-run growth stems from factors outside the model . . . An intuitively appealing model of growth would allow for permanent effects of savings and taxation by endogenizing technological change' (1992: 180–1). Three aspects of recent attempts to improve upon traditional growth economics are of particular interest to postwar European experience.

First, accumulation of capital plays a bigger part in growth outcomes in the new growth theory. The concept of capital which is embraced is typically 'broad capital', which subsumes both physical and human components, the latter comprising skills and/or a stock of knowledge. A common feature of balanced growth solutions involves a constant steady-state ratio of physical to human capital, and an implication of this approach, at a minimum, is that diminishing returns to the accumulation of reproducible factors of production are much less severe than in a traditional Solow model. The well-known Mankiw, Romer and Weil Augmented-Solow model (1992) has an exponent on broad capital in a Cobb–Douglas framework of 2/3, double that on capital in the Solow model. In general, there is a strong expectation that with a broad concept of capital there may be important externalities to investment. Some models, including, for example, the famous Rebelo (1991) $Y = A\tilde{K}$ formulation, assume constant returns to broad capital formation, in which case growth can be regarded as fully endogenous. It should be noted that radical revision to growth accounting methods may be required if models of this kind are empirically verified.

Second, savings/investment decisions are now explicitly placed in terms of optimizing behaviour rather than exogenous as in the Solow formulation. Similarly, substantial attention has been given to introducing imperfect competition into growth models to provide an appropriate incentive structure for investment in innovative activity (Romer, 1994). An important implication of these developments is to allow economic policy and institutional structures a much greater potential impact on growth outcomes through the investment processes on which they impinge.

A third important feature of recent work is research into convergence. The traditional neoclassical and Augmented-Solow growth models embody convergence to a steady-state growth rate. If countries had identical technology and the same savings and population growth rates, then in the long run convergence would in all cases be to the same steady-state growth rate and per-capita income level. The speed of convergence depends in particular on the severity of diminishing returns to capital. (No such mechanism operates in the Rebelo model.)

As this convergence process takes place, we would expect in the cross-section of countries to observe both a negative relationship between the initial level of income per head and subsequent growth, and also a reduction in the coefficient of variation of per-capita income, which would eventually tend to zero. Barro and Sala-i-Martín (1991) called these β- and σ-convergence respectively.

Actually, the process which may be observed is probably more likely to be one of 'conditional convergence', as growth accounting implicitly assumes, as economic historians have always tended to believe, and as new growth theory emphasizes. Here allowance would be made for additional variables such as 'social capability', technology gaps and accumulation strategies, and these would be controlled for in

Table 1.10. *Estimated trend rates of growth of output per person in different periods (% per year)*

	1860–1914	1920–39	1951–73	1974–89
Belgium	0.90	1.01	3.90	2.09
Denmark	1.77	1.58	3.46	1.59
France	0.96	0.78	4.92	1.42
Germany	1.47	2.91	5.11	1.26
Italy	1.47	0.21	5.31	2.05
Sweden	1.52	3.03	3.42	1.62
UK	1.04	1.56	2.24	1.83
USA	1.70	0.86	1.54	1.89

Note: Dataset taken from Maddison (1991); start date for Italy = 1861, USA = 1869.
Source: Crafts and Mills (1996), which includes full details of estimation methods, statistical significance and testing for unit roots.

regressions of income on initial income level. Conditional convergence might in principle be based on initial disequilibria in factor proportions, or on technology transfer in a world where obstacles are reduced. Indeed, 'technological catching-up' might be observed in contexts which produce local rather than global convergence (Durlauf and Johnson, 1992).

It should be recognized that, while the new growth economics has produced a substantial volume of empirical research, in several important respects theory has run ahead of measurement, especially with regard to examining differences within the advanced countries rather than between the First and Third Worlds. This is particularly true with respect to measuring human capital, which is unfortunate given the new weight attached to it by theory, and in the area of quantifying influences on the ex-ante decision to invest.

5 Europe's postwar growth in a long-run perspective: some quantitative aspects

Section 2 established the broad quantitative elements of the unique experience of the Golden Age and of the subsequent slowdown. In this section we scrutinize the data more closely, using modern analytic tools to review key ideas both from economic history and the new growth economics.

Initial insights into growth in the Golden Age can be obtained using time series econometrics, as in Crafts and Mills (1996). Some of their results are summarized in Table 1.10. Crafts and Mills' approach takes seriously Maddisons's suggestion of epochs in growth, and estimates a segmented trend with breaks at 1914, 1919, 1939, 1950 and 1973 for countries with long-run GDP data. Tests are also given of the Jánossy (1969) hypothesis, well known to students of West German growth, that the Golden Age was an era of reconstruction and rapid recovery back to a long-run trend path of growth as in the Solow model, based on a constant exogenous rate of Harrod-neutral technological change and, thus, labour productivity growth.

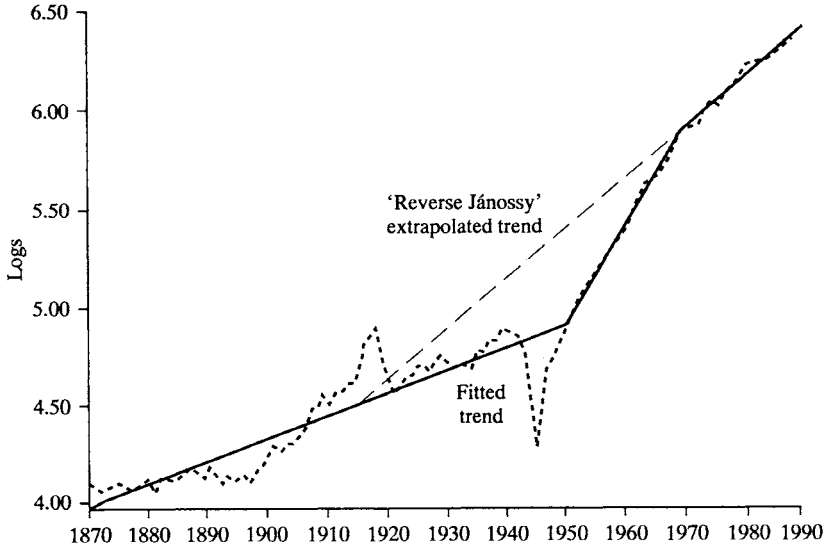

Figure 1.1 Trend growth of real output per person in Italy, 1870–1990

The estimates in Table 1.10 give strong support to the hypothesis that for European countries the trend rate of growth was exceptionally rapid during the Golden Age. The technical details of the estimation also establish that the hypothesis of a unit root in GDP per person can be rejected in favour of the segmented trend stationary alternative in every case, a result which goes against the idea of fully endogenous growth with constant returns to accumulation. Further testing revealed that, when growth slowed down again, in all but one case (Denmark) European countries were enjoying a higher output per person to that which might have been expected simply on the basis of extrapolating their pre-1914 experience. However, although the pure Jánossy hypothesis is generally rejected, in a number of cases backward extrapolation of the post-Golden Age trend does go back to join the actual series at a pre-disturbance date, if the final break of trend is dated by an endogenous search procedure. Italy is a case in point, as is shown in Figure 1.1, where the contrast with the USA stands out. Thus, the Jánossy (1969) stress on reconstruction as an important ingredient in Golden Age growth in many European countries is still useful, even though his traditional constant-trend neoclassical growth model appears too rigid.

Levine and Renelt (1992) conducted an extensive analysis of the findings of empirical work on growth in the 1960–89 period, based on international cross-section datasets. Their work is set in a catching-up framework and provides estimated equations to account for growth, while at the same time investigating the robustness of alternative specifications. Their results offer an alternative to Maddison-style growth accounting and do not impose assumed elasticities of output with respect to physical and human capital formation.

In Table 1.11 we use one of Levine and Renelt's equations to consider what new

Table 1.11. *Using the Levine–Renelt model to account for changes in European growth of output per head*

	1923–38	1950–73	1973–89
Constant	2.01	2.01	2.01
Initial GDP/head	−2.43	−2.49	−3.55
Investment/GDP	1.42	2.22	2.06
Secondary enrolment	0.16	0.68	0.79
Primary enrolment	1.90	1.99	1.79
Government/GDP	−0.62	−0.87	−1.27
Forecast	2.44	3.54	1.83
Actual	2.12	3.84	2.14

Sources: Estimates are for unweighted averages of European countries in Maddison (1991), excluding Belgium and Switzerland, and use Levine and Renelt (1992) equation (ii), with population growth and irrelevant dummies ignored. The initial income variable was expressed as a percentage of the US level in each year, and this figure was then multiplied by 1950 US income per person as measured by Levine and Renelt. Basic sources of data were Maddison (1991), Mitchell (1988) and OECD (1991b), augmented for interwar investment by Maddison (1992) and for interwar government consumption expenditure by den Bakker *et al.* (1990), Feinstein (1972), Hansen (1974), Hjerppe (1989), Krantz and Nilsson (1975), Rossi *et al.* (1992), Sommariva and Tullio (1986) and Villa (1993).

growth theory might suggest accounts for the speeding up and slowing down of European growth in the postwar years. This equation predicts growth of output/person using measures of the initial productivity gap, investment and government consumption shares and school enrolment rates as independent variables. Although Levine and Renelt doubt the robustness of the government consumption variable, we include it here given the strong evidence that there is a robust relationship in OECD countries, if not across the whole world (Dowrick, 1992).

Taken at face value, the results in Table 1.11 indicate the following:

- The acceleration in growth in the Golden Age came from greater investment in both physical and human capital, rather than a larger initial income gap than in the interwar period.
- The speed-up in growth in the Golden Age has a significant unexplained component (of about one-third); the Golden Age saw improved growth which may reflect an enhanced catch-up capability in the postwar world and/or adverse effects of protectionism and demand shocks in the interwar period.
- The slowdown in growth after 1973 is quite well explained and reflects lower scope for catch-up, as captured by a lower initial income gap and a rising share of government consumption.

Compared with the results obtained by traditional growth accounting, this approach attributes more of the acceleration in growth in the Golden Age to human capital and less to TFP growth. Thus 1.41 percentage points of the 1.72 increase in growth between 1923–38 and 1950–73 is attributed to broad capital accumulation. However, the slowdown after 1973 is attributed much more to erosion of catch-up

opportunities than in Maddison's work (cf. Table 1.6) – in Table 1.11 this explains about three-fifths of the change in growth rate pre- and post-1973.

Such mechanical exercises must, however, be treated with some scepticism, as the failure fully to account for the change in growth before and after the Second World War underlines. A central difficulty is the crudeness of the proxy for human capital formation, which, as with traditional growth accounting, does not encompass on-the-job and vocational training. Also, although the results hint at an enhanced 'social capability' for growth in postwar Europe, they cannot identify its source and in that respect offer no advance on earlier growth accounting.

The suggestion that there was something different about the post-1945 growth process is strengthened by explicit consideration of convergence. As has been widely recognized, the evidence is against β- and σ-convergence prior to 1950 in Maddison's (1991: 53) dataset for the advanced countries. Since 1950 β- and σ-convergence in GDP/hour worked have been strongly present.

Conditional convergence since 1960 in the OECD has been extensively analysed by Andres *et al.* (1996). They broadly support the Mankiw *et al.* (1992) analysis in that they find a convergence coefficient of about 2 per cent per year and slowly diminishing returns to broad capital, which has an exponent of about 0.8. These results are subject, however, to a number of important qualifications. In particular, Andres *et al.* find that convergence characterizes the period before 1975 rather than after, and that the model estimates are not stable over subsamples, suggesting differences in the underlying production functions across countries.

Indeed, according to Broadberry (1996), at least as far as manufacturing is concerned, the evidence suggests that there is a European 'convergence club', but that North America still has a large productivity lead after the Golden Age. This may prove hard to reduce further as market size and natural resource endowments still play a role, albeit less significant than before the Second World War. In other words, North America may belong to a different 'convergence club', and this suggests that there were limits to the profitability of imitating American methods. Broadberry's long-run data are shown in Table 1.12. This table tends to suggest that catching up in manufacturing was incomplete during the Golden Age, and that other elements such as structural change and reduced productivity gaps elsewhere in the economy also played a part in overall catch-up.

An important element in the catch-up growth of the Golden Age was clearly a reduction in technology gaps, which had previously been sustained by protectionism and limited transferability of American know-how (Nelson and Wright, 1992). Verspagen (1995), in an investigation of σ-convergence based on analysis of the effects of patenting on growth, concluded that catching-up effects were related to genuine convergence in technological competence, but that nevertheless serious differences in technological capabilities remain, i.e. that the technology assumptions underlying pure neoclassical growth models did not obtain.

These results are in many ways similar to those of Helliwell (1992), whose econometric study found strong convergence effects in technical progress in the OECD during 1963–89, with evidence that these were intensified by increasing openness to international trade. Ben-David (1993) filled out this picture by establishing also that σ-convergence among European countries was particularly marked in the immediate aftermath of episodes of trade liberalization.

Overall, what picture has emerged from this long-run perspective? The following are the key points.

- The central aspect is the highly unusual nature of growth in the Golden Age, 1950–73, which has been revealed by each of the approaches we have considered. The period was one of unprecedentedly rapid catch-up by Europe of the USA and, among the European countries, one which is characterized by both β- and σ-convergence in Barro and Sala-i-Martín's terminology.
- The empirical implementation of new growth theory considered in Table 1.11 offers further support for the argument in section 3 that traditional accounts of postwar growth give too little weight to human capital. At the same time, the improvement in growth relative to the interwar period is not fully accounted for by current methods of quantification.
- While reconstruction played a part in the Golden Age, catching up involved far more than this. Technology gaps were reduced and investment reached unprecedently high levels. As Abramovitz put it (1986: 395), this was 'the period when – exceptionally – the three elements required for rapid growth by catching up came together . . . large technological gaps; enlarged social competence . . . and conditions favouring rapid realization of potential'.
- The European countries seem to have been in an Augmented-Solow rather than a Rebelo-type world – in which case the ending of the Golden Age should not have been such a surprise. This seems to be a reasonable inference based on the results of Andres *et al.* (1996) and Mankiw *et al.* (1992), together with the general absence of a unit root in GDP. In the longrun, though perhaps not straightaway, weakly diminishing social returns to the postwar investment boom could be expected, and scope for catch-up would be diminished.

6 The years of high growth

As we have seen in the previous sections, the so-called Golden Age (roughly dated 1950–73) is unique in the history of the European economy in terms of both growth rates and cyclical stability. So far we have examined a number of quantitative explanations of the causes of the Golden Age. Some of them are more satisfactory than others. The recent stress on conditional convergence, human capital and endogenous technical change has undoubtedly advanced understanding for this fast-growth episode. Nevertheless, much remains to be explained. In order to fill out the picture, we now consider some key historical and institutional factors that make the 1950s and 1960s a unique period in the economic history of Europe.

6.1 The legacy of the 1930s and of the war

During the interwar years, the aggregate European economy grew at a slower pace than the American, in terms both of output and of productivity. The performance of Europe was also below its pre-1913 record (Maddison, 1991). The features of the European slowdown during the 1930s were likely to give way to a process of catch-up according to a neoclassical view, if we consider the latter as a function of an increasing gap between steady-state and actual output per worker (Barro and

Table 1.12. *Comparative levels of labour productivity in manufacturing (UK output per employee = 100)*

	1870	1913	1929	1938	1950	1973	1989
UK	100	100	100	100	100	100	100
USA	204	213	250	192	263	215	177
Canada	132	230	256	218	227	229	185
Australia		138	102	101	96	86	81
Germany	100	119	105	107	96	119	105
Netherlands			102	117	88	133	128
Norway		90	109	95	103	104	85
Sweden		102	94	100	118	128	121
Denmark			115	98	88	89	93
France		79	82	76	84	114	115
Italy		59	59	49	68	96	111
Japan		24	32	42	20	95	143

Source: Broadberry (1996).

Sala-i-Martín, 1991). The latter resulted from the slowdown in the accumulation of physical capital not being matched by an equal deceleration in human capital formation. Even during the war, the depletion rate of the two kinds of capital was biased against physical assets, particularly those in the social overhead stock. In addition, diffusion of technology speeded up and American know-how was more fully deployed in Europe. In effect, the new postwar world offered greater opportunities for effective technology transfer (Nelson and Wright, 1992).

A typical situation for swift catch-up growth was thus created: once trade and intellectual barriers were removed, the transfer of technology – both embodied and disembodied – was met by an adequate stock of human capital in the recipient countries that made possible a rapid narrowing of the gap between steady-state and actual product per worker. In a more general Abramovitz (1986) framework, one may say that Europe's overall 'social capability' for growth had been hibernating, but had not been destroyed.

6.2 Reconstruction and postwar settlement

Wartime loss of output was considerable. In the largest continental countries (Germany, France and Italy), the productive effort of more than an entire generation was lost as 1945 per-capita incomes stood at around the 1900 levels, as Table 1.2 reported. The speed of 'reconstruction' (by which we mean the recovery of the 1938 levels of production per head) took most observers by surprise. In five or six years, at most, the losses in output and capital stock were made good. The process of reconstruction does not need to concern the present discussion of longer-run causes of postwar growth, except for noting (1) that it provides yet another proof of the existence of an exceptional 'social capability' for growth almost everywhere in Europe and (2) that it is likely to have set in motion the exploitation of scale economies and thus longer-run increasing returns.

The social, legal and political institutions, both international and national, created soon after the war are of paramount importance in explaining the extraordinary growth of the 1950s and 1960s. The establishment of such institutions, or the 'postwar settlement' as it has come to be known in the literature (Eichengreen, 1993), is plausibly seen (Maier, 1987) as the terminal point in a process aimed at reversing the crisis that afflicted European liberal capitalism at the end of the nineteenth century. In this view, two related problems needed to be solved during the twentieth century by the élites superintending Western European societies: those of legitimation and those of production. The leaders of the 1920s 'rallied with persuasive justifications of capitalist entrepreneurship', but 'they did not solve the economic dilemma of continuous production and high employment . . . only by the 1950s were afflictions that undermined capitalist stability effectively overcome as a whole. The cumulative achievement required the institutional flux that was left in the wake not of one but of two wartime upheavals' (Maier, 1987: 162). Rather than simply contrasting the unwise outcome of the Versailles Peace Conference with the prudence of Bretton Woods and of the Marshall Plan, this perspective to twentieth-century history helps in understanding the roots of the second 'postwar settlement' and, thus, its pervasive and lasting impact on European societies. In employing its newly found leadership to 'ensure the primacy of economics over politics and to de-ideologise issues of political economy into questions of output and efficiency', the United States simply encouraged an existing trend, did not impose it (Maier, 1987: 146–9). It is then possible to speak of a 'consensual American hegemony', in the sense that a social basis for productivity-enhancing politics had acquired solid foundations in Europe.

The 'postwar settlement' consisted of two mutually reinforcing parts: international and domestic. The high investment ratios that characterized the Golden Age rested on more or less explicit social pacts aimed at increasing productivity, whereby workers exercised wage moderation on the understanding that capitalists would plough back their profits into the productive process. The relative degree of economic success of individual countries depended to a fairly large extent on the ability to make the 'pact' appealing and credible in the long run. The international setting was crucial in both respects. On the one hand, it made the pact appealing by guaranteeing a minimum standard of living during the early postwar years through the Marshall Plan and the European Payments Union.[12] On the other hand, it created an environment (characterized by stability in domestic prices and exchange rates, and by growing international trade) which made agents confident about the real value of their incomes as well as about their future increases.

A somewhat similar pact was reached in Eastern Europe, albeit with a higher degree of coercion. There too production goals acquired primary social relevance. The socialist state, with the crucial political mediation of the party, took upon itself the role of guaranteeing a high rate of investment and full employment in exchange for low wages and social discipline.

6.3 Causes of growth during the Golden Age

We have seen that catch-up was an important element of postwar European growth, particularly during the so-called Golden Age. Nevertheless, we maintain that

catch-up is by no means an automatic phenomenon. The peculiar economic, institutional and political circumstances created by the Great Depression, autarky, war and reconstruction were particularly favourable to postwar European growth in general and to catch-up in particular. In what follows, we briefly discuss the interplay of favourable factors that made this unique episode in the economic history of Europe possible.

Most explanations are unsatisfactory. This is true both of those advanced in the 1960s and of the most recent ones proposed by the 'new growth theory'. A stress on the pure mechanics of 'catch-up' is likewise inadequate. In order to account for the exceptional speed and stability of European economic growth in the 1950s and 1960s, one must take into account the equally exceptional circumstances whereby a number of factors affecting the production system and the macroeconomic structure were allowed to interact with singularly apt institutional arrangements in the international economy and in the individual countries.

The main 'virtue' of backwardness lies in the fact that agents can appreciate the enormous gains potentially involved in borrowing technology and capital from more advanced countries, once the 'social capability' for growth is created in the recipient country. The introduction of the Taylorist system looked particularly promising in economies that, by the early 1950s, enjoyed a level of per-capita income (not too far off the US level in the early 1920s) characterized by high income elasticity of demand for consumer durables. Some of these countries had begun experimenting with mass production just before the war (the UK, Germany). The appreciation of the existing potential for growth is witnessed by the number of productivity missions sent to, or invited from, the United States to see 'how American prosperity could be emulated' (Glyn *et al.*, 1990: 56).

In order to take full advantage of the adaptation of American technologies to European conditions, business and trade union practices had to be adjusted accordingly. The speed and the lasting impact of adaptation varied from country to country, but the spread of the new productivity ideology, stressed by Maier, was universal. The 'new international order' was crucial in inducing both entrepreneurs and workers to adopt the necessary changes in their respective behaviours. In particular, it provided both a short-term bridge to the new growth path and a guarantee of its payoff in the long run. It was this extraordinary mix, seldom to be found in other historical circumstances, that triggered the 'virtuous circle' of the Golden Age. It was often the case that governments were faster than either workers or business organizations in appreciating the potential long-run benefits to be drawn from the new situation; almost everywhere they created a social and institutional environment consistent with long-run sustained growth.

For imported technology to produce high productivity growth, an educated and disciplined workforce was a necessary precondition. As we have seen, one of the great advantages of Europe over other areas lay precisely in the 'previous accumulation' of good-quality human capital. Some wage moderation, however, was necessary for productivity gains to generate investment ratios high enough to yield economies of scale and further productivity gains. Wage moderation depended (1) on a fairly elastic supply of labour (as described in Kindleberger (1967)), and (2) on the expectation of long-term improvement in the workers' standard of living. The latter condition could be created only by a credible commitment on the part of

employers to plough back retained profits into investment. A stable international business environment, expectations about a steady decrease of barriers (both tariff and non-tariff) to trade and about the stability of the foreign exchange at a slightly devalued rate made the commitment both possible and credible (Eichengreen, 1996). On the domestic front, conditions for a pledge to high rates of investment were reinforced by a monetary policy which, for being aimed at keeping a fixed parity with the dollar, promised low inflation rates as well. Controls on international capital movements – a feature of the Bretton Woods system – allowed some governments to pursue a policy of 'artificially low' interest rates, thereby providing a further stimulus to investment in manufacturing, housing and infrastructure. A commitment to welfare state provisions was also instrumental in moderating wage demands. In terms of new growth theory, these institutional arrangements played a role similar to that of low direct taxation, and indeed operated to counteract the record levels of direct taxation which were a further aspect of the new postwar European scene.

Parallel growth of investment, productivity and real wages was a key element in the unique episode in the economic history of mankind that has come to be known as the Golden Age of capitalism. Income distribution was crucial to the continuation of this process. As long as it was consistent with a balanced growth of consumption and investment, high rates of growth in output and productivity could continue in an environment of extraordinary macroeconomic equilibrium, which came to be built into expectations and, therefore, to be an important reinforcing element of the growth process itself.

In section 8 below we briefly discuss some of the country-specific features of the process of rapid growth of 1950–73. Here, however, we would like to stress that many of the causes that are likely to explain such process are common to all the countries that shared in it. In particular, the overwhelming importance of the international environment in generating and sustaining growth is witnessed by the fact that, while Spain and Portugal did not experience in 1945 a real break with the past and were throughout ruled by authoritarian regimes, their rates of growth accelerated in response to the decision to link the economic future of both countries to that of the West. Thus, in 1953, with the so-called Pact of Madrid, Spain allowed the United States to open airforce and navy bases in return for technological aid and, more generally, for better prospects of long-term integration in the 'Atlantic economy' (see, for instance, Preston (1991)). Portugal almost doubled its average rate of growth, relative to the previous decade, after joining the Bretton Woods system in 1960.[13] The Irish case can, perhaps, be taken as a proof *a contrario*. The Anglo-Irish agreement of 1948 was too narrow in international scope to result in a positive shock to entrepreneurial expectations, while the best performing years of the Irish economy are those that followed the 1958 commitment to trade liberalization (Ó Gráda and O'Rourke, 1996).[14]

Relatively rapid productivity growth also surfaced in Eastern Europe during the Golden Age, although here a high rate of capital accumulation enforced by Communist governments loomed large. Indeed, growth in these countries relied heavily on the mobilization of factors of production into the industrial sector, in which central planning tended to promote inefficient use of resources together with inferior innovation performance (Bleaney, 1988: ch. 4). Given these characteristics of the

Communist bloc, marked tendencies to slowdown towards the end of the Golden Age were to be expected as capital stock growth and capital productivity growth declined and transfers from the backward sector dried up (Ehrlich, 1993: 312–19).

7 Slowdown and instability

After the early 1970s, the pace of expansion of European production and productivity fell back to its secular trend, close to Kuznets' modern economic growth averages. In particular:

- The average annual growth rate of GDP fell to 2.6 per cent in 1973–9 and 2.0 per cent in 1979–90; the performance in the latter period was slightly worse than that of the USA (Glyn, 1993: table l).
- Investment rates equally declined by about 3 percentage points for the whole of the business sector and 1.3 per cent for manufacturing in 1979–89 (Armstrong *et al.*, 1991: tables A5 and A6).
- Both GDP per worker and manufacturing output per hour worked growth halved relative to the Golden Age.

If seen in a broad secular perspective, the *explanandum* in postwar European economic history appears to be not so much the slowdown of the 1970s as the growth spurt of the previous two decades. Nevertheless, a large body of literature exists trying to explain the reasons for and the timing of the slowdown as well as why the hopes for a revival of the Golden Age after two oil shocks have proven short-lived.[15]

The reasons for the longer-run unsustainability of the high growth rates of 1950–73 are to be found in the very success of the Golden Age,[16] and in the fact that it rested on the simultaneous – and improbable – occurrence of a number of favourable factors. As we have seen, high growth was made possible by the gains deriving from the transfer of the (Taylorist) mass production technology in a receptive (socially capable) environment stabilized by a strong American leadership. This made possible an efficient co-ordination in the bargaining process for income distribution, leading to high and balanced demand for investment and consumption and, therefore, to macroeconomic stability, which in turn reinforced the process in a sort of virtuous circle. As the individual building blocks of this construction interacted in a mutually reinforcing process, so the cracking and eventual crumbling of one or a few of them undermined the solidity of the entire building.

Triffin (1957) was the first to point to the self-defeating instability of a system of international payments which postulated both growing American current account deficits and the willingness of the Europeans to hold dollar-denominated reserves rather than gold. It was first of all rapid growth itself – more than American domestic monetary policies – that stressed the stability of the Bretton Woods system and eventually brought it to an end (Bordo, 1993). In a broader perspective, one can say that it was American leadership itself that rested on feet of clay. Soon after the war, its legitimacy hinged on the United States providing economic assistance in return for policy compliance; US hegemony lost some of its legitimacy in European eyes when, rightly or wrongly, they perceived the Bretton Woods system as being utilized 'to exact tribute through seignorage (accumulating dollar liabilities abroad and buying European assets with an overvalued currency)' (Maier, 1987: 149). At the

same time, the pursuit of international leadership slowly lost consensus at home as 'American hegemons... could not demand renunciation on the part of the American working classes for the sake of providing liquidity to the West' (Maier, 1987: 150). International leadership could be exercised only as long as its domestic costs were relatively negligible, and for this very reason could not be maintained in an expanding world.

At the same time, returns deriving from high investment rates and from the transfer of technology eventually began to diminish. And, since the (more or less implicit) social pact governing class relations in most European countries rested on the ability of the economy to deliver rapidly expanding standards of living to the workers, it became less and less feasible to maintain the particular income distribution that had made possible both high investment rates and macroeconomic stability. As the latter began to flounder and profit shares to fall, the postwar social pact was virtually over in a number of countries, and a chain reaction of scrambling for income distribution was set in motion. In countries such as France and Italy, where both the economy and social cohesion were weaker, tensions surfaced in the late 1960s: they set in motion a decline in profit rates incompatible with the long-run continuation of the postwar boom, while at the same time tax rates were now rising quickly.

If the above factors explain the deterioration of the delicate international and domestic equilibria of the Golden Age, other more specifically economic reasons may be found behind the long-term decline in productivity in Europe, as well as in Japan and the United States. Among these, one might mention: (1) a slowdown in the potential for exploitation of economies of scale, (2) changes in production technology and (3) changes in demand patterns.

Taylorism and chain production technology were particularly apt at producing economies of scale internal to the firm; at the same time they were singularly fit to profit from the possibility of drawing relatively unskilled labour from agriculture to manufacturing. This technology slowly gave way to new productive methods (highlighted, for instance, by the Japanese lean production in the automotive sector), the introduction of which was partly a response to a new consumer sophistication (emphasis on quality, individual specification of products and the like) resulting from growing incomes and, therefore, from Europe's economic success itself. However, the shift to new production processes required long and costly adjustments not only on the shop floor but, much more importantly, in society at large. In particular, a more flexible use of resources (labour) in response to demand and supply shocks was postulated. Such changes took a long time to come about and are not yet fully embedded in the European work culture and organization. At the same time, growing per-capita incomes entailed a demand shift to the service sector. Studies on the latter's productivity do not yield unequivocal results, and show a wide cross-country dispersion both in the levels and in the rates of growth of productivity. They seem, however, to point in the direction of slower productivity growth relative to the manufacturing sector (e.g. Elfring, 1988).

From the point of view of catch-up and convergence, post-1973 European growth experience was much less clear-cut than during the Golden Age. In particular: (1) relative to the USA, the productivity catch-up proceeded at a slower rate during the 1970s and stopped, if not reverted, in the following decade (underperformance

vis-à-vis Japan continued throughout), and (2) evidence of intra-European catch-up is weaker than in the past (Table 1.4), but the previous convergence process *within* Europe continued. As mentioned earlier, partly as a result of the latter process, around the Netherlands and Sweden's median per-capita income (Table 1.4) a cluster of nine countries now exists, with incomes falling within an interval of ± 8.0 per cent. If we take it, with Blanchard (1991), that capital and labour mobility are likely to produce convergence, the clustering of so many European countries in the same per-capita income range may be seen partly as the result of increased factor mobility within the community, as well as the result of its enlargement from the mid-1970s onward.

The standard subdivision of the most recent period in Europe's economic history – 1973–79 and 1979–92 – is still the most useful when focusing on policy making and on institutions (the latter including the rise and fall of the European Monetary System). The 1973–9 period was substantially one of transition and adjustment. The changes in industrial relations, highlighted by the wage explosion and strikes which accompanied the end of the Golden Age, account for most of the double-digit inflation that characterized ten of the sixteen countries in our sample. However, money supply accommodation of distributional conflicts was only a transitory solution. The response to the second oil shock, therefore, showed that an overall change in policy stance was under way in most European countries.

Floating exchange rates had created a vicious circle of inflation in the weaker economies, and had added uncertainty to the business environment everywhere due to the much increased level of speculative capital flows. The creation of the European Monetary System (EMS) in 1978 was seen as a response to this situation, in that it required member countries partly to renounce their monetary sovereignty. Similarly, after the dollar crisis of 1978–9, the Federal Reserve inaugurated a period of tight money. This overall change in policy stance opened the way to 'industrial restructuring': in some countries (Germany) it went almost unnoticed, being the continuation of a process of mergers and reorganization that had started much earlier; in others (UK, Italy) it was the result of a deliberate policy aimed at increasing productivity. In the latter case, it was made possible by the intervening weakening of the trade unions[17] due to high unemployment in the 1970s as well as to broader changes in the composition of the labour force. However, except in the case of the UK where industrial restructuring resulted in higher output per worker, labour productivity growth was on average lower in the 1980s than in the previous decade.

8 Factors in the performance of individual countries

In earlier sections we have emphasized common aspects of postwar European experience. Now we switch the focus to an analysis of 'winners' and 'losers', and to briefly considering the contribution made by new growth theory in explaining relative success and failure.

Table 1.13 gives a first view of success or failure in the postwar convergence process and takes account of different initial starting points which imply, in an augmented neoclassical model, differential scope for 'catch-up growth'. The estimates are based on the well-known Barro and Sala-i-Martín (1991) model of

Table 1.13. *Actual and forecast convergence, 1950–8617 (GDP/hour) (USA = 100)*

	Actual	Forecast		Actual	Forecast
Australia	78	81	Argentina	28	50
Austria	74	43	Brazil	25	29
Belgium	86	60	Chile	33	53
Canada	92	86	Columbia	28	38
Denmark	68	61	India	4	8
Finland	67	48	Korea	21	18
France	94	58	Mexico	27	35
Germany	80	47	Peru	20	34
Italy	79	48	Philippines	11	20
Japan	61	27	Taiwan	20	15
Netherlands	92	64			
Norway	90	61			
Sweden	82	67			
Switzerland	68	72			
UK	80	73			

Source: Crafts (1992a) based on applying the Barro and Sala-i-Martín (1991) model to data supplied by Maddison.

convergence, with its suggestion that on average catching up reduces the productivity gap by 2 per cent per year. Two points stand out in the table.

- European countries tend generally to exceed predicted rates of convergence, while the opposite is the case for South America. Perhaps Europe and South America belong to different convergence clubs and have different steady-state income levels; perhaps this table also emphasizes the unusual conjuncture of conditions favourable to catch-up in postwar Europe.
- While the model's predictions are unbiased, nevertheless there is a wide variation of performance around the forecast convergence rate. Some European economies did distinctly better than others on this normalized basis: for example, France and the Netherlands outperformed Denmark and the UK.

The estimation of catching-up growth models might offer some clues to this experience, and Table 1.14 returns to the Levine and Renelt equation discussed in Table 1.11. This allows comparisons of predictions of growth for each country with the average, based on the factors listed in the table. The model works surprisingly well, given that it was estimated for a much wider sample, and also predicts quite a wide range of outcomes within Western Europe, partly because it embodies quite a strong catching-up effect. To reduce distortions from reconstruction, the Golden Age is viewed in terms of the post-1960 period.

Table 1.14 suggests that during the Golden Age differences in initial income level had the largest single effect on relative growth performance, given the large initial dispersion of income levels. As with traditional growth accounting, relatively little difference between countries shows up in education, as enrolment trends were very similar across Europe, although France and Germany on the positive side and Spain on the negative side are noticeable in the 1960–73 period. The UK's weak

Table 1.14. *Growth performance and its sources relative to the European average: an analysis based on Levine–Renelt (% per year)*

	Scope for catch-up	Investment	Education	Public sector	Unexplained	Total
1960–73						
Austria	0.24	0.24	−0.11	0.02	−0.32	0.07
Belgium	−0.08	−0.24	0.19	0.06	0.24	0.17
Denmark	−0.85	−0.03	0.04	−0.21	0.42	−0.63
Finland	0.13	0.21	0.05	0.02	−0.14	0.27
France	−0.15	−0.03	0.55	−0.02	−0.28	0.07
W.Germany	−0.66	0.07	0.43	−0.08	−0.59	−0.83
Ireland	1.18	−0.32	−0.20	0.04	−1.23	−0.53
Italy	0.71	0.03	−0.19	0.05	−0.23	0.37
Netherlands	−0.30	0.08	−0.01	−0.03	−0.37	−0.63
Norway	−0.51	0.38	0.16	−0.09	−0.67	−0.73
Portugal	1.95	−0.02	−0.01	0.10	0.85	2.87
Spain	1.27	0.01	−0.34	0.34	1.89	3.17
Sweden	−0.61	−0.12	−0.17	−0.33	0.40	−0.83
Switzerland	−1.78	0.36	−0.17	0.25	0.11	−1.23
UK	−0.49	−0.55	−0.08	−0.19	−0.32	−1.63
1973–89						
Austria	0.33	0.22	−0.02	0.02	−0.20	0.35
Belgium	−0.20	−0.28	0.11	0.14	0.24	0.05
Denmark	−0.35	−0.30	0.08	−0.44	0.86	−0.15
Finland	0.17	0.29	−0.05	−0.07	−0.59	−0.25
France	−0.28	−0.07	0.24	0.02	−0.06	−0.15
W. Germany	−0.20	−0.15	−0.07	−0.07	0.74	0.25
Ireland	1.30	0.02	0.05	0.05	−1.07	0.35
Italy	0.36	−0.03	−0.04	0.18	0.08	0.55
Netherlands	−0.26	−0.18	−0.01	0.13	−0.03	−0.35
Norway	0.08	0.47	0.12	−0.09	0.47	1.05
Portugal	1.13	0.38	−0.18	0.21	−1.29	0.25
Spain	0.77	0.04	0.13	0.31	−1.20	0.05
Sweden	−0.63	−0.26	−0.03	−0.55	0.82	−0.65
Switzerland	−2.05	0.17	−0.07	0.35	0.65	−0.95
UK	−0.18	−0.39	−0.01	−0.14	0.37	−0.35

Sources: As for Table 1.11.

record in physical investment is highlighted as a problem, as is the relatively large public sector in Denmark and Sweden. In terms of 'unexplained' performance, which presumably reflects aspects of 'social capability' not captured in the regressions, Ireland stands out as a disappointment, but a notable feature is the lack of correlation in this component between the two periods.

Once again, it is important to treat the results of this accounting exercise with caution. Clearly, at best this approach cannot deal with issues of endogeneity, nor can it explain why investment strategies differed. Moreover, the proxies for human capital formation (enrolment ratios) are crude and, in particular, ignore training.

Also the results are somewhat at odds with those of other studies, such as Dowrick and Nguyen (1989), suggesting that in comparisons of the advanced countries the precise attribution of sources of growth is quite sensitive to small changes in specification of the model.

Nevertheless, the exercise confirms that normalizing for catch-up potential still leaves something to be explained. We can think of two rather different, although potentially complementary, ways of using new growth theory. The first would be essentially microeconomic in focus and would consider the roles of Marshallian externalities, learning effects and specific technological expertise in fostering differences in comparative advantage and growth potential, as in Lucas (1993). The prospect of serious research along these lines is exciting and may ultimately prove fruitful.

At present, however, the second line of research is further advanced and, as set out above, offers the main existing set of empirical evidence. This research looks at the overall accumulation strategies of different countries in an effort to explain differences in growth performance through both the extent and the effectiveness of investment. If catch-up is not automatic and 'social capability' for growth varied within postwar Europe, this may be part of the reason for the results in Tables 1.13 and 1.14. Although a macro perspective will undoubtedly miss part of the story, there are good reasons, in principle, for expecting it to be useful. In particular, it should be noted that relatively weak productivity performance frequently appears to have been a national rather than a sectoral phenomenon (Dosi *et al.*, 1990).

Quite a number of variables have been suggested by researchers working in the new growth economics as additional explanatory factors in winning and losing in the growth league. Data on some of these are reported in Table 1.15. Among these European countries, the differences are generally not very large, and such variables may be much better at separating third world 'failures' from OECD 'successes' than at explaining high investment or 'social capability' for growth in a European context. There are, however, more important reasons for doubting the value of standard new growth variables in providing a full account of postwar European growth based on new growth economics. These appear to be particularly important in the areas of incomplete catching up and incentives to investment. They relate to the roles of institutions and policy in economic growth.

Abramovitz, in stressing that catch-up growth is not automatic, noted that it can be blocked by 'vested interests, established positions, and customary relations among firms and between employers and employees' (1986: 389). As noted in section 3, attempts to operationalize this proposition in regressions following up sclerosis in an Olsonian framework have not been successful. Such influences may in fact not be amenable to quantification and may, in the end, be unduly neglected by analysis of this kind.

In the case of incentives to invest, the position is more complicated and less well understood. The potential value of new growth theory is to place investment and the growth to which it gives rise in an optimizing framework, in which success and failure are the outcome of rational behaviour rather than the laundry list of scapegoats provided by traditional economic history. In such an approach, institutions and government policy will surely matter, but may not be easy to model.

For example, empirical investigations of the effects of taxation on growth have

Table 1.15. *Some new growth variables*

	LLY (1964/5)	*Td/Y(%)* (1960)	*RD/Y(%)* (1970)
Austria	0.48	19.7	0.61
Belgium	0.46	16.9	1.31
Denmark	0.46	15.9	0.96
Finland	0.39	14.9	0.78
France		21.5	1.91
Germany	0.42	21.6	2.06
Italy	0.65	20.4	0.88
Netherlands	0.59	21.7	2.01
Norway	0.52	17.9	1.10
Sweden	0.47	19.0	
Switzerland	1.01	10.6	2.25
UK	0.35	19.1	2.18

Sources: *LLY* is ratio of liquid liabilities to GDP as defined by King and Levine (1993), *Td/Y* is direct taxes/GDP from OECD (1981), *RD/Y* is research and development spending/GDP from OECD (1991c).

provided much less decisive results than one would expect from the a priori reasoning of new growth theory (Easterly and Rebelo, 1993). Part of the reason for this may be that readily available measures are of average rather than marginal tax rates. Also, ex-ante capital taxation rates depend crucially on expectations of inflation, as the work of King and Fullerton (1984) emphasizes.

Bean and Crafts (1996) and Eichengreen (1996) both explore a related point: namely, the possibility of firms and their workers making credible commitments to a high investment/wage moderation equilibrium. They recognize that government may have an important role in brokering a 'social contract' and ensuring appropriate industrial relations. Such 'deals' in postwar Europe were likely to involve higher taxes and welfare spending as part of the package, which, in context, were investment enhancing rather than the opposite. In general, recent work on investment has stressed the importance of irreversibilities and the sensitivity of required rates of return to the degree of uncertainty in the economic environment (Pindyck and Solimano, 1993).

All these considerations will not be captured by a conventional 'tax rate' measure, but should, in principle, be subsumed in the ex-ante hurdle rates imposed on investment decisions in different countries in different time periods. Such data would capture the full flavour of recent theorizing, but unfortunately do not presently exist.

9 Concluding comments

Recent developments in growth economics have changed the way we think about the postwar period, but they have by no means yet provided us with a complete

understanding of the Golden Age and subsequent slowdown. Nevertheless, current models and empirical techniques allow more plausible insights into the experience than was possible with the older theories reviewed in section 3.

The main findings of this overview essay are the following:

- It is useful to think in terms of epochs of growth. In that context, the years *c.* 1950–73 stand out as a time when European growth was exceptionally rapid and the economic environment favoured rapid catch-up and convergence. Postwar reconstruction of the international economy delivered a large positive shock to the European economy.
- New growth theory seeks to place more emphasis on factor accumulation and less on unexplained TFP growth in explaining long-run growth. Empirical investigation using the Levine and Renelt (1992) approach supports this interpretation of the acceleration of growth postwar and, in particular, suggests that human capital formation deserves much greater weight than it was accorded by earlier writers. Obtaining better measures of human capital formation is a high priority because it is in this area that empirical work suggests that externalities may be especially important, whereas it seems that for physical capital these are trivial (Oulton and O'Mahony, 1994).
- Nevertheless, a significant fraction of the acceleration in growth during the Golden Age does not seem to be readily accounted for by new growth models. This would appear to result from changes facilitating technology transfer and raising returns to investment. There may be a role here for some of the policy changes stressed by early postwar accounts, including trade liberalization and demand stabilization, in eliminating obstacles to the faster growth which had prevailed between the wars.
- The slowdown after 1973 appears less surprising when viewed in a long-run context and against the evidence, which suggests that in the end there are diminishing returns to investment in broad capital and that the notion of reverting to earlier trend rates of growth still has some validity.
- A full understanding of Europe's Golden Age of economic growth requires a subtle appreciation of the impact of policy and institutions on incentives to invest and obstacles to complete catching up. Recent work in growth theory provides new insights which will require detailed historical research before their full implications can be brought out.

NOTES

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1 Western Europe is by and large the 'unit of observation'of this book. In this context it comprises the twelve countries mentioned in Table 1.1. Further on we

shall refer to Europe as a unit including sixteen countries (the above-mentioned twelve plus Spain, Portugal, Ireland and Greece). Were data for these countries available and reliable for the whole 1870–1993 period, their inclusion would not have greatly altered the figures in Table 1.1, their demographic weight being roughly 15 per cent of the total.

2 See, for instance, Kuznets (1965:48–58). He argues that modern economic growth necessarily produces a shift in the disparities in economic and social conditions among nations due to 'rapid growth of new units or relatively rapid decay of others. [Such shifts] often produce elements of aggression by which the new leaders attempt to claim the prerequisites of economic power, the old and surviving leaders attempt to deal with the new weakness that may have arisen' (1965:50).

3 Given the wide scope for measurement errors and sensitivity of growth rates to the selection of beginning and end years, the difference between the long-run performance and that of the post-1973 years is hardly significant.

4 Between 1870 and 1890 the rate of growth of per-capita output in the twelve countries included in Table 1.1 was only 0.7 per annum (data from Maddison (1991)).

5 Reference here is made to the highest peacetime income, since wartime production (which peaked in 1942 or 1943) is at best of dubious significance in terms of long-run growth in income and welfare, particularly as far as defeated countries are concerned.

6 Discussion of business cycles is beyond the scope of this paper: suffice it to say that never during the period did any European country suffer a decline in GDP.

7 The average inflation rate in the four largest European countries (France, Germany, Italy and United Kingdom, totalling about threequarters of the population of the twelve countries in Table 1.1) between 1950 and 1973 was 4.0 per cent when measured by consumer price indices. It was 8.4 between 1973 and 1989 (10.0 if Germany is excluded). The 1950–73 record compared unfavourably with the virtual absence of inflation in the two decades preceding the First World War, when consumer prices rose on average by 0.6 per cent per annum in the four countries during 1890–1913. (Data from Maddison (1991: 296–307).

8 Japan's growth in GDP per capita between 1950 and 1973 was 8.0 per cent per annum, two and a half times faster than Japan's own secular trend (1900–92), tentatively put at around 3.1 per annum (Maddison, 1995).

9 Rates of growth in real GDP per capita

Country	1900–92	1950–73	1973–92
Australia	1.5	2.4	1.4
Canada	2.1	2.9	1.7
USA	1.8	2.4	1.4

Source: Maddison (1995).

All three countries show (1) a secular rate of growth within Kuznets' 'norm' and not far from the European average, and (2) much less pronounced acceleration and deceleration during 1950–73 and 1973–92 than was the case with the European economy as a whole.

10 The same twelve as in Table 1.1.

11 France, Germany, Italy and the United Kingdom, totalling between 75 and 80 per cent of the aggregate labour force for the twelve countries in Table 1.1. Given the rather similar size of the three labour markets, arithmetic averages provide a

fairly accurate assessment of the unemployment rate for the four-country aggregate.

12 The latter mattered in as much as it allowed the avoidance of a choice between devaluation and domestic deflation, had full convertibility been chosen early in the game (Eichengreen, 1993: 86–9).

13 Portugal's average growth rate in GDP per capita was 3.87 per cent in 1950–60 and 6.45 per cent in 1960–73.

14 The commitment was taken in the Government's Programme for economic expansion in 1958, later known as the First Programme (Ó Gráda and O'Rourke, 1996).

15 See, for instance, the excellent bibliography in Marglin and Schor (1990).

16 'The catch-up process by its own workings undermined the bases of the growth boom to which it gave rise' (Abramovitz, 1990: 9).

17 Judging from the number of days' strikes per 100 employees, this was certainly the case in the UK, France and Italy, where they declined sharply in the 1980s relative to the 1970s. They remained stable in Germany and the Netherlands and rose in the Scandinavian countries. (Data on strikes from Glyn (1993)).

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